REMARKS

Claims 1-4, 6-13 and 15 are now pending in the application. Claim 1 is amended to incorporate the feature of claim 3 and claim 3 is deleted. The Examiner is respectfully requested to reconsider and withdraw the rejections in view of the remarks and amendments contained herein.

REJECTION UNDER 35 U.S.C. § 103

Claims 1-4, 6-13 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chen et al. (U.S. Pub. No. 2004/0165592) in view of Silverman (U.S. Pat. No. 6,731,649). This rejection is respectfully traversed.

Claim 1 recites:

> A method for providing service with guaranteed Quality of Service (QoS) in IP access networks, each of the IP access networks comprises an edge router connected to a backbone network, and an access network end device connected to subscribers, comprising:
>
> a1. a calling subscriber sending a request, to a service entity, for a service with guaranteed QoS;
>
> a. the service entity at network service control layer judging service rights of the calling subscriber after receiving the request, obtaining a calling subscriber address and a called subscriber address, and determining QoS requirement for the service, then sending a resource request to an edge router to request resources;
>
> b. the edge router corresponding to the calling subscriber and a called subscriber computing bandwidth between a access network end device and the edge router after receiving the resource request and determining whether there are enough resources for this service according to topology structure of the IP access network and bandwidth resources of each interface of the IP access network, if there are enough resources, the edge router notifying the service entity that there are enough resources; and the edge router receiving confirmation information from the service entity, executing c., otherwise rejecting the service request of the calling subscriber; and

c. if there is an upward traffic stream sent from one of the calling subscriber and the called subscriber to the corresponding IP access network for this service, the corresponding edge router informing the corresponding access network end device of the QoS requirement for the service, and the corresponding access network end device setting items of a stream classification table according to parameters for identifying the upward traffic stream contained in the QoS requirement; classifying the upward traffic stream sent from one of the calling subscriber and the called subscriber; and performing bandwidth limitation according to bandwidth parameters in the QoS requirement informed by the corresponding edge router for the upward traffic stream when matched with the items of the stream classification table, and processing the upward traffic stream when not matched as an upward traffic stream without guaranteed QoS;

if there is a downward traffic stream to be sent to one of the calling subscriber and the called subscriber from the corresponding IP access network for this service, the corresponding edge router setting priority in the corresponding IP access network for this service and forwarding the downward traffic stream to the corresponding subscriber according to the priority set by the corresponding edge router.

1. The Examiner asserts that paragraphs 91 and 95-96 show signaling SETUP message to edge ATM switch to determine the requested service is available. The Examiner asserts that paragraph 35 shows that connection server 25 determines bandwidth available in ATU-Rs and DSLAMs. The Examiner asserts that paragraph 56 shows that connection server 25 ensures and grants bandwidth and thus discloses the feature of "the service entity sending a resource request to an edge router to request resources" in claim 1. Applicants respectfully traverse the Examiner's assertion.

Paragraphs 35 and 56 at best disclose that the connection server 25 determines and grants the bandwidth, but does not disclose "the service entity sending a resource request to an edge router to request resources."

Paragraphs 91, 95 and 96 discloses that upon receipt of the connection setup request, the ATU-R 12 sends a standard SVC SETUP message over a standard UNI

signaling channel, transparently through the DSLAM 14, to the Extended Virtual UNI of the ATM switch 15.

The Examiner asserts that the network service agent of Chen is equivalent as the service entity of the application, and the ATM switch of Chen is equivalent as the edge router of the application. In Chen, it is the ATU-R 12, rather than the network service agent that sends the SETUP message to the ATM switch 15. Thus, Chen does not disclose the service entity sending a resource request to an edge router to request resources.

2. The Examiner asserts that paragraphs 94-95 show that signaling includes QoS requirement, SETUP message to ATM edge switch and the QoS application sends a QoS connection setup message through the API to the ATU-R. The Examiner asserts that paragraph 97 shows that the ATM switch determines if it can satisfy the requirement of connection based on traffic descriptor. The Examiner asserts that paragraph 98 shows indicating initiation of the requested connection at the QoS requirements and VPI/VCI used. The Examiner asserts that paragraphs 99-101 show receiving QoS and SETUP message from ATM edge to ATU-R via API and thus disclose the claimed features of "if there is an upward traffic stream sent from one of the calling subscriber and the called subscriber to the corresponding IP access network for this service, the corresponding edge router informing the corresponding access network end device of the QoS requirement for the service." Applicants respectfully traverse the Examiner's assertion.

In paragraphs 94 and 95 of Chen, once the source subscriber 10 has retrieved the AESA, it initiates a connection with the ATM network 16 by sending a signaling

message, such as a setup connection request, to the ATU-R 12 at step 514. The QoS application sends a QoS connection setup message through the API to the ATU-R. Upon receipt of the connection setup request, the ATU-R 12 sends a standard SVC SETUP message over a standard UNI signaling channel, transparently through the DSLAM 14, to the Extended Virtual UNI of the ATM switch 15 at steps 515 and 516. In Chen, the direction of the signaling flow is as follows: the source subscriber 10 sends the setup connection request to the ATU-R 12, and the ATU-R sends the SVC SETUP message to the ATM switch 15. Contrary to Chen, in the claim 1, it is the edge router (which is allegedly equivalent to the ATM switch 15) that informs the access network end device (which is allegedly equivalent to the ATU-R 12) of the QoS requirement for the service. In conclusion, in Chen, the SVC SETUP message is sent from ATU-R to the ATM switch 15. In claim 1, the QoS requirement is sent from the edge router (which is allegedly equivalent to the ATM switch 15) to the access network end device (which is allegedly equivalent to the ATU-R 12). In addition, in Chen, the ATU-R 12 sends the SVC SETUP message to the ATM switch 15 when the connection setup request, which is a control signaling message, is received. In one or more embodiments of claim 1, the edge router informs the access network end device of the QoS requirement when there is an upward traffic stream. It is well known to a person skilled in the art that the connection set up request and the upward traffic stream are two different kinds of signaling.

Paragraph 98 of Chen discloses that the ATM switch 15 initiates a standard SVC connection setup procedure. For example, the ATM switch responds to the ATU-R 12 with a CALL-PROCEED message at step 517 to indicate initiation of the requested

connection at the QoS requirement. The message informs the ATU-R 12 which VPI/VCI should be used for this connection. Here, initiating the requested connection **at** the QoS requirement does not mean that the ATM switch 15 sends the QoS requirement to the ATU-R 12.

Paragraphs 99-101 relating to steps 518-520 actually discuss a signaling flow from ATM switch 19 to ATU-R 42, i.e. the downward signaling flow.

In view of the above, Chen does not discloses or suggest the features of "if there is an upward traffic stream sent from one of the calling subscriber and the called subscriber to the corresponding IP access network for this service, the corresponding edge router informing the corresponding access network end device of the QoS requirement for the service" in claim 1.

3. The Examiner asserts that paragraphs 35, 39, 97, 98 and 106 of Chen disclose the features of "performing bandwidth limitation according to bandwidth parameters in the QoS requirement informed by the corresponding edge router for the upward traffic stream when matched with the items of the stream classification table." Applicants respectfully traverse the Examiner's assertion.

In claim 1, the bandwidth limitation is performed for the upward traffic stream after the edge router determines that there are enough resources between the access network end subscriber and the edge router and after the upward traffic stream is received from one of the calling subscriber and the called subscriber. In addition, the bandwidth limitation is performed during the upward traffic stream is transmitted.

In contrast, paragraph 35 of Chen at best shows that the connection server 25 performs the CAC after receiving the connection request, i.e. before the QoS

connection is established. Since the QoS connection has not been established, the CAC can not be performed on the traffic packets transmitted through the established QoS connection.

One skilled in the art would appreciate that the bandwidth limitation for the upward traffic stream refers to limiting the traffic of the upward traffic stream sent from the user according to the bandwidth parameters in the QoS requirement. Paragraph 39 of Chen at best shows transmitting the traffic packets over the QoS connection or the default route, but does not mention the bandwidth limitation for the upward traffic stream. Once an upward traffic stream is received during the transmission, claim 1 requires performing the bandwidth limitation for the received upward traffic stream. In contrast, the CAC in Chen is just performed once, i.e. performed before the establishment of the QoS connection.

Similarly, paragraph 97 of Chen also refers to performing a standard ATM UNI CAC and an Extended Virtual UNI CAC to determine whether there is enough available or equivalent bandwidth to accommodate the new connection. That is to say, paragraph 97 also at best shows the CAC before the establishment of the QoS connection.

Paragraph 98 of Chen at best shows indicating initiation of the requested connection at the QoS requirement, but does not mention bandwidth limitation for the upward traffic stream.

Paragraph 106 of Chen at best shows imposing policing, such as billing, on each connection based on the traffic descriptors. Paragraph 106 also does not mention limiting the bandwidth of the upward traffic stream by the access network end device.

In view of the above, the bandwidth limitation in the application is used for limiting the traffic of the upward traffic stream sent from the user according to the bandwidth parameters in the QoS requirement. While the CAC in Chen is used for determining whether there is enough available or equivalent bandwidth to accommodate the new connection. Thus, the CAC performed in Chen differs from the bandwidth limitation as recited in claim 1.

Thus, Chen does not teach or suggest the features of "performing bandwidth limitation according to bandwidth parameters in the QoS requirement informed by the corresponding edge router for the upward traffic stream when matched with the items of the stream classification table."

4. The Examiner asserts that paragraph 35 shows that connection server 25 determines bandwidth available. The Examiner asserts that paragraph 56 show that connection server 25 ensures and grants bandwidth. The Examiner asserts that paragraph 97 shows that ATM switch determines if it can satisfy the requirement of connection based on traffic descriptor. The Examiner asserts that paragraph 98 shows that ATM switch sends a CALL-PROCEED. The Examiner asserts that paragraph100 shows checking whether there are enough network resources to accommodate this connection. If check fails, a standard release message is returned. The Examiner asserts that paragraph 101 shows that ATU-R sends a CALL-PROCEED. The Examiner asserts that paragraph 106 shows that a policy is imposed on each connection based on the traffic descriptor and thus discloses the feature of "the edge router notifying the service entity that there are enough resources; and the edge router receiving confirmation information from the service entity."

The Examiner asserts that the ATM switch of Chen is equivalent to the edge router of claim 1, and that the network service agent of Chen is equivalent to the service entity of claim 1. In any event, Chen does not disclose or suggest the ATM switch notifying the network service agent that there are enough resources and the ATM switch receiving confirmation information from the network service agent after the ATM switch determines that it can satisfy the requirement of connection based on traffic descriptor.

Paragraphs 35, 56, 97 and 100 at best disclose determining whether there are enough resources. Although paragraphs 98 and 101 disclose sending the CALL-POCEDD message, in paragraph 98 the CALL-POCEDD message is sent from the ATM switch 15 to the ATU-R 12 and in paragraph 101 the CALL-POCEDD message is sent from ATU-R 42 to the ATM switch 19. In addition, the CALL-POCEDD message is for indicating initiation of the requested connection at the QoS requirement, rather than notifying the network entity that there are enough resources.

In view of the above, Chen does not teach or suggest ATM switch notifying the network service agent that there are enough resources and the ATM switch receiving confirmation information from the network service agent.

In Chen, once the ATM switch determines that it can satisfy the requirement of connection based on traffic descriptor, the ATM switch sends a CALL-PROCEED. However, In Chen, the requested connection of the CALL-POCEDD message from the ATM switch may be not established because an opposition entity is not prepared for the connection.

In claim 1, when the edge router determines that there are enough resources for the service according to topology structure of the IP access network and bandwidth

resources of each interface of the IP access network, the edge router still need to notify the service entity that there are enough resources and do the following proceed when the edge router receives confirmation information from the service entity for guaranteeing QoS.

Thus, Applicants respectfully submit that Chen also does not disclose or suggest the features of "determining whether there are enough resources for this service according to topology structure of the IP access network and bandwidth resources of each interface of the IP access network, if there are enough resources, the edge router notifying the service entity that there are enough resources; and the edge router receiving confirmation information from the service entity."

Further, Silverman fails to cure the deficiencies of Chen, because Silverman appear silent about the above mentioned distinguishing features of claim 1. Thus, Chen and Silverman, taken alone or together, do not teach or suggest the subject matter of claim 1.

Applicants submit that claim 1 and its dependent claims 2, 4, 6-13 and 15 define over the art cited by the Examiner.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and

favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

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